

REMARKS

Claim 16 has been amended to recite, as in Claim 15, that the silica sol liquid also contains a partial hydrolyzate of an alkoxysilane oligomer. The claims before the Examiner remain Claims 14-16 and 18-23.

The withdrawal of the rejection of claims under 35 U.S.C. § 102 over Watanabe et al. EP '429 is noted.

The rejection of Claims 14-16 and 18-23 under 35 U.S.C. § 103 as unpatentable over Hansen et al. '629 in view of Watanabe et al. '610 is respectfully traversed.

Applicants' invention is directed to a discovery that the placement of a transparent coated layer on at least the inside and/or outside surface of a glass quartz crucible, wherein that transparent coated layer is formed of a crystallization promoter dispersed in a silica matrix allows the formation of a uniform layer of cristobalite when single crystals of silicon are being pulled from a polysilicon in the quartz glass crucible; Claim 14 also requires the presence of polysilicon in the quartz glass crucible. The advantages of the invention are discussed at page 4, lines 8-17 of the specification.

The primary reference describes placement of a devitrification promoter as an outside layer on a crucible. The drawbacks associated with such a structure are discussed at length in the present application and are shown in the comparative examples in which a barium carbonate promoter is the sole constituent of a layer in the crucible that comes into contact with the polysilicon. These drawbacks include loss of promoter because of weak adhesion to the quartz glass crucible, possible health concerns for workers who come into contact with the detached promoter, low nucleation efficiency because of promoter loss, and inability to wash the crucible after application of the promoter as it is liable to be washed away; these prior art problems are discussed in the paragraph bridging pages 1 and 2 of the specification. No. 8 in the examples is a "conventional quartz glass crucible having the barium carbonate

powder” (see page 15, lines 12-13); Tables 2-4 (page 18) report respectively the adhesion amounts of metal oxide, cracking and retained amounts of Ba after washings, and rates of single crystallization and size of crystallization layers after pulling up. Comparable values for crucibles of the present invention are clearly superior.

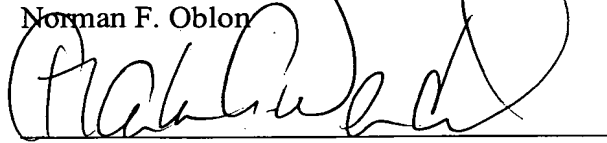
The Examiner asserts that Watanabe et al. ‘610 shows a layer in which a crystallization promoter is dispersed in a silicon matrix but Applicants respectfully disagree. The secondary reference is directed undoubtedly to a construction in which a crystallization promoter containing body 4a is located between a base body 3 and an internal layer of synthetic silica 4; see Fig. 2 of the reference. There is no showing in the reference of a transparent coated layer present at at least the inside and/or the outside surface of the crucible wherein that layer comprises a crystallization promoter dispersed in a silica matrix. Indeed the reference at column 2, lines 63-65 discusses start of the crystallization “at the boundary between the synthetic quartz glass layer and the crystallization promoter-containing layer.” The structure of the present invention is not taught or suggested from a joint consideration of the references.

The Examiner’s comments in the Response to Arguments section of the Office Action are noted and have been taken into consideration. The secondary reference at column 8, lines 10-35 was said to teach use of a layer as claimed in the present case “to improve adherence and improve safety by reducing the risk of inhalation and ingestion of the promoter.” The patent has been reviewed and the undersigned says with respect that the cited portion has no such teaching or suggestion. It is respectfully submitted for the reasons given above that the claims patentably define over these references and a USPTO paper to those ends is earnestly solicited.

The Examiner is requested to telephone the undersigned if additional changes are required in the case prior to allowance.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.  
Norman F. Oblon



Charles A. Wendel  
Registration No. 24,453

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 03/06)  
NFO:CAW\dt